

CLAIMS

We claim:

1. An antenna tower module for mounting to an antenna mast and for supporting one
5 or more antennas, the antenna tower module comprising:
a bottom plate for mounting to the mast or to another module;
a top plate spaced apart from the bottom plate; and
a multi-vaned beam extending between the bottom plate and the top plate, the
multi-vaned beam including a central post and a plurality of stiffening vanes extending
10 generally radially outwardly from the central post.
2. An antenna tower module as claimed in Claim 1 further comprising a distal flange
at a distal end of each of the vanes and extending transversely to the radially extending
vanes.
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3. An antenna tower module as claimed in Claim 1 wherein the central post has a
circular cross-section.
4. An antenna tower module as claimed in Claim 1 wherein the central post has a
20 rectangular cross-section.
5. An antenna tower module as claimed in Claim 1 wherein the plurality of vanes
comprises at least three vanes.
- 25 6. An antenna tower module as claimed in Claim 5 wherein the plurality of vanes are
equally spaced from one another.
7. An antenna tower module as claimed in Claim 5 wherein the plurality of vanes are
unevenly spaced from one another.

8. An antenna tower module as claimed in Claim 1 wherein each of the vanes is discontinuous.

5 9. An antenna tower module as claimed in Claim 1 wherein each of the vanes is welded to the central post at two or more locations between the top plate and the bottom plate.

10. An antenna tower module as claimed in Claim 5 wherein the at least three vanes comprises four vanes.

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11. An antenna tower module as claimed in Claim 10 wherein spacing between the four vanes is selected to define two relatively large recesses for receiving antennas therein and two relatively smaller recesses.

15 12. An antenna tower module as claimed in Claim 1 further comprising a shroud for visually obscuring the multi-vaned beam and any antennas mounted thereto.

13. An antenna tower module as claimed in Claim 1 wherein the top plate and the bottom plate are circular.

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14. An antenna tower module as claimed in Claim 1 wherein the top plate and the bottom plate are rectangular.

25 15. An antenna tower module as claimed in Claim 1 wherein the top plate and the bottom plate are shaped to generally match or coordinate with the shape of a pattern formed by the multi-vaned beam.

16. An antenna tower comprising:

a mast;

at least one antenna tower module mounted to the antenna mast for supporting one

5 or more antennas, the antenna tower module including:

a bottom plate for mounting to the mast or to another module;

a top plate spaced from the bottom plate; and

a multi-gusseted beam extending between the bottom plate and the top plate,

the multi-gusseted beam including a central post and a plurality of stiffening gussets

10 extending generally radially outwardly from the central post; and

one or more antennas mounted to the antenna tower module.

17. An antenna tower is claimed in Claim 16 wherein the at least one antenna tower module comprises at least two antenna tower modules, with the first of the modules being

15 mounted atop the mast and the second of the modules being mounted atop the first module.

18. An antenna tower as claimed in Claim 16 further comprising flanges at the distal ends of the gussets and extending transversely to the radially extending gussets.

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19. An antenna tower as claimed in Claim 17 wherein the first antenna tower module has a different number of radially extending gussets than the second antenna tower module.

25 20. An antenna tower is claimed in Claim 17 are in the first antenna tower module has the same number of radially extending gussets as the second antenna tower module.

21. An antenna tower as claimed in Claim 16 further comprising a shroud for visually obscuring the antennas mounted to the antenna tower modules.

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22. In an antenna tower assembly of the type having a pole or mast, and including an upper portion for mounting antennas thereto, the improvement therein comprising stiffening the upper portion of the assembly with a plurality of radially extending structural webs.

5 23. The improvement of claimed 22 further comprising transversely extending flanges provided at the distal ends of the structural webs and extending transversely to be structural webs.

10 24. An antenna tower support structure for mounting to an antenna mast and for supporting one or more antennas, the antenna tower support structure comprising:
a bottom element for mounting to the mast or to another support structure;
a cap spaced from the bottom element; and
a beam extending between the bottom element and the cap, the beam including a
central post and a plurality of webs extending generally radially outwardly from the central
15 post.

20 25. An antenna tower support structure as claimed in Claim 24 further comprising outer flanges, one each at a distal end of each of the webs and extending transversely to the webs.

26. An antenna tower support structure as claimed in Claim 24 wherein the plurality of webs are equally spaced from one another.

25 27. An antenna tower support structure as claimed in Claim 24 wherein the plurality of webs are not equally spaced from one another.

28. An antenna tower support structure as claimed in Claim 24 wherein at least one of the webs is perforated.

29. An antenna tower support structure for mounting to an antenna mast and for supporting one or more antennas, the antenna tower support structure comprising:
- a bottom member for mounting to the mast or to another module;
 - 5 a top member spaced apart from the bottom member; and
 - a tension-compression beam extending between the bottom member and the top member, the tension-compression beam including a central post and a plurality of peripheral stiffening flanges spaced radially outwardly from the central post.
- 10 30. An antenna tower support structure as claimed in claim 29 further comprising a plurality of webs extending between the central post and the peripheral flanges.
31. An antenna tower support structure as claimed in claim 31 wherein the plurality of webs extending radially outwardly from the central post to the peripheral flanges.
- 15 32. An antenna tower comprising:
- a mast;
 - at least three antenna tower modules mounted atop the antenna mast for supporting one or more antennas, the antenna tower modules each including:
- 20 a bottom plate for mounting to the mast or to another module;
 - a top plate spaced from the bottom plate; and
 - a high-strength beam extending between the bottom plate and the top plate.
33. An antenna tower as claimed in claim 32 wherein the high-strength beam comprises
- 25 a central post and multiple stiffening gussets reinforcing the central post and extending between the bottom plate and the top plate, the stiffening gussets extending generally radially outwardly from the central post.

34. An antenna tower as claimed in claim 32 wherein the high-strength beam comprises a central post and a plurality of generally T-shaped wings attached to the central post, the generally T-shaped wings extending generally radially outwardly from the central post and reinforcing the post and extending between the bottom plate and the top plate.

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